U.S. Army Natick Soldier Center

"Everything But War Is Simulation"

Warrior Systems Modeling & Analysis Points of Contact:

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Warrior Systems Modeling & Analysis

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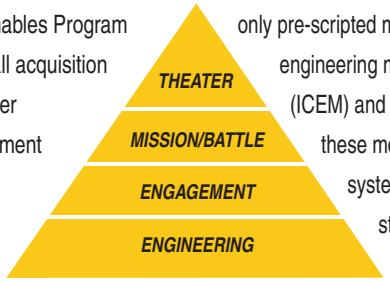
The Modeling and Analysis (M&A)Team supports decision makers through the development and application of models and tools required to perform critical analyses throughout the acquisition life cycle. By appllying the principles of Simulation and Modeling for Acquisition, Requirements and Training (SMART) and Simulation-Based Acquisition (SBA), the M&A Team enables Program Managers to make informed decisions while reducing overall acquisition time, cost and risk, thus supporting the development of better equipment. These results are achieved through the development and execution of constructive, multi-sided, force-on-force simulation models such as the Integrated Unit Simulation System (IUSS).



COMBAT SIMULATION HIERARCHY

This software platform is PC-based and is fully DIS/HLA compliant. The model uses an "Intelligent Agent" approach to the simulation of dismounted combatants. These intelligent, autonomous agents can sense and influence change in their surroundings, acting on their perceptions of the "real world" instead of following only pre-scripted missions. The IUSS is supplemented with associated engineering models like the Integrated Casualty Estimation Methodology (ICEM) and the Dynamic Nutrition Model (DYNUMO). Use of IUSS and these models in the assessment of conceptual components and systems supports program decision makers in developing investment strategies for major Army programs, such as the Future Combat System and the Objective Force Warrior.

Integrated Unit Simulation System

Goals for Warrior Systems Improvement Using IUSS

***Lethality*- improved target acquisition and servicing in all battlefield environments, day and night.**

***Command & Control*- improved communication, combat command decisions, situational awareness and understanding.**

***Survivability*- improved survivability and reduced detectability across the spectrum of enemy weapon systems.**

***Sustainability*- improved ability of soldier to sustain himself and his equipment, maintaining optimal performance levels.**

***Mobility*- improved dismounted mobility, trafficability and mission routing.**

MODELING & ANALYSIS TEAM

NATICK SOLDIER CENTER

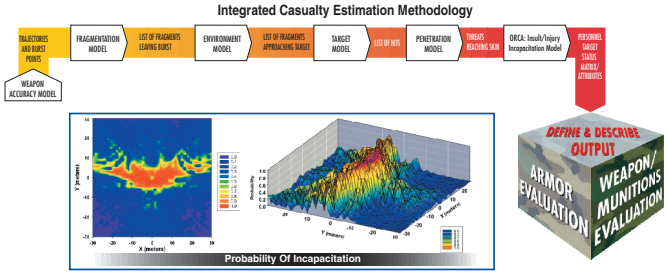
"Intelligent Agent" Approach

- **Supports analysis of military operations through exploration of autonomous entities operating in a virtual world**
- **Permits use of "Goal Driven" behaviors in place of pre-scripted actions**
- **Supports representation of command and control through coordinated actions of individual combatants, fire teams and other unit structures**
- **Allows greater freedom to capture the variability inherent in human behavior**

Integrated Casualty Estimation Model

Laying the foundation for sound warrior systems analysis based on consistent, valid, and robust data and tools.

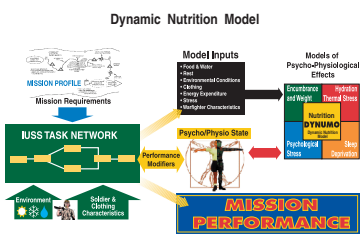
Integrated Casualty Estimation Methodology

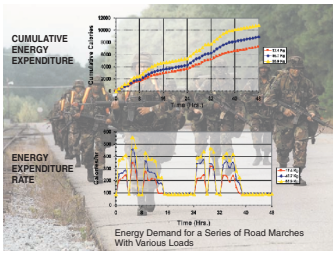


Dynamic Nutrition and Fatigue Modeling

Developing a scientific psycho-physiological basis for load optimization and ration selection/scheduling.

Dynamic Nutrition Model





Energy Demand for a Series of Road Marches With Various Loads